WHAT IS CLAIMED IS:

1. A filter for removing soot from the exhaust gases from a diesel engine, comprising: (a) a flow-through filter element comprising a porous metal substrate formed by electrodepositing a metal in the interstitial spaces of a packed array of substantially electrically nonconductive particles of a material and then substantially removing the material of the particles to produce the porous metal substrate; (b) a hollow body comprising an inlet port and an outlet port, the filter element being positioned in and sealed to the hollow body so that diesel exhaust gases directed into the inlet port of the hollow body flow through the porous metal substrate from the inlet side of the porous metal substrate to the outlet side of the porous metal substrate and then out the outlet port of the hollow body, the bulk density of the porous metal substrate being less than 40% of the density of the metal of the substrate, the average pore diameter of the pores at the inlet side of the porous metal substrate being larger than one micrometer, the area of the pores of the inlet side of the porous metal substrate being greater than about 35% the area of the inlet side of the porous metal substrate.

2. The filter of Claim 1, wherein the average pore diameter of the pores at the inlet side of the porous metal substrate is in the range of from five to twenty micrometers.

3. The filter of Claim 1, wherein the bulk density of the porous metal substrate is less than 25% of the density of the metal of the substrate.

4. The filter of Claim 2, wherein the bulk density of the porous metal substrate is less than 25% of the density of the metal of the substrate.

5. The filter of Claim 1, wherein the metal is nickel or an alloy comprising nickel.

6. The filter of Claim 2, wherein the metal is nickel or an alloy comprising nickel.

7. The filter of Claim 3, wherein the metal is nickel or an alloy comprising nickel.

8. The filter of Claim 4, wherein the metal is nickel or an alloy comprising nickel.

9. The filter of Claim 1, wherein the average pore diameter of the pores at the outlet side of the porous metal substrate is less than thirty micrometers.

10. The filter of Claim 4, wherein the average pore diameter of the pores at the outlet side of the porous metal substrate is less than ten micrometers.

11. The filter of Claim 8, wherein the average pore diameter of the pores at the outlet side of the porous metal substrate is less than ten micrometers.